

A STUDY OF PERINATAL OUTCOME IN TWIN GESTATION IN A TERTIARY CARE CENTER*Rinku Girija¹, Tanya Salim², Nandini Vamadevan Retnamma³*¹Assistant Professor, Department of Obstetrics and Gynaecology, SATH, Government Medical College, Trivandrum, Kerala.²Assistant Professor, Department of Obstetrics and Gynaecology, SATH, Government Medical College, Trivandrum, Kerala.³Professor, Department of Obstetrics and Gynaecology, SATH, Government Medical College, Trivandrum, Kerala.**ABSTRACT****BACKGROUND**

Perinatal mortality is an index of obstetric care. Twin pregnancy is a high-risk pregnancy since most often the foetus is born prematurely or retarded physically; it may turn out to be a dreaded event, especially in rare instances of simultaneous death of twins or death of one twin in mid trimester thereby worsening the prognosis of the surviving twin.

The aim of the study is to study the perinatal mortality and morbidity of twin gestation and factors affecting the same in a tertiary care center.

MATERIALS AND METHODS

This is a prospective study. 100 successive cases of multiple pregnancy beyond 28 weeks of gestation admitted during the study period were followed from the antenatal period upon their admission to the antenatal ward and the labour room. 100 cases of singleton pregnancies during the same period taken as control. Detailed obstetric history, family history of twins, intake of ovulation inducing agents, time of diagnosis of twin pregnancy confirmed by USS examination were noted. Maternal antenatal complications like anaemia, hypertension, jaundice, etc. noted. The mode of onset of labour, presentation of foetus noted and if possible confirmed by USS, routine and special investigation like PIH profile, FBS, PPBS. Doppler USS done wherever necessary. Study Setting and Design- It is a prospective observational study of 100 consecutive twin gestations of gestational age 28 weeks and above at a tertiary care hospital attached to Government Medical College, Thiruvananthapuram, for a period of 6 months. Perinatal outcome including perinatal morbidity and mortality in relation to gestational age, mode of delivery, chorionicity, birth weight of the baby and NICU admission were analysed.

RESULTS

Data collected was analysed with descriptive statistics like percentage, proportion, rates, ratio and chi-square test.

CONCLUSION

In spite of so many advances in Obstetrics and Neonatology, the perinatal mortality and morbidity in twin gestation is still alarmingly high. In present study, the perinatal mortality was 12% and NICU admission rate was 26% as against 5% and 13% for singleton pregnancies, respectively. In conclusion, it can be said that early diagnosis, proper antenatal care, vigilance during labour and good NICU facilities can improve the perinatal outcome in twin gestation.

KEYWORDS

Twin Gestation, Perinatal Outcome, Perinatal Morbidity, Antenatal Care, Birth Weight, Neonatal Care.

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BACKGROUND

The incidence of multiple pregnancy is on the increase, which has been attributed to the increase in the use of ovulation inducing agents, use of assisted reproductive technologies and a shift towards bearing children at older maternal ages, when multiple gestations are more likely to occur naturally. Recent advances in obstetrics and neonatology has improved the outcome in many high-risk

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pregnancies. Nevertheless, the risk in twin gestation remains significantly higher than that of singletons, both to mother and her baby. Twins are associated with increased perinatal mortality, mainly related to prematurity, but complication during birth may contribute to perinatal loss or morbidity.

MATERIALS AND METHODS

This is a prospective study. 100 successive cases of multiple pregnancy beyond 28 weeks of gestation admitted during the study period were followed from the antenatal period upon their admission to the antenatal ward and the labour room. 100 cases of singleton pregnancies during the same period taken as control. Detailed obstetric history, family history of twins, intake of ovulation inducing agents, time of diagnosis of twin pregnancy confirmed by USS examination were noted. Maternal antenatal complications like anaemia, hypertension, jaundice, etc. noted. The mode of onset of

labour, presentation of foetus noted and if possible confirmed by USS. Routine and special investigation like PIH profile, FBS, PPBS, Doppler USS done wherever necessary.

Antenatal corticosteroids were given routinely to all cases presenting with preterm labour and also complicated cases needing early delivery. Induction was needed in some cases for various obstetric indication. Pelvic examination done to assess the stage of labour, presentation, status of membrane, any PROM and the adequacy of pelvis and repeated once first twin delivered.

Blood was arranged in all cases and active management of 3rd stage of labour was practiced. Details of mode of delivery, time interval between delivery of the twins, chorionicity of placenta noted, gestational age at the time of delivery, baby's sex, birth weight, Apgar score, NICU admission and any stillbirth, NNDS, etc. noted. Patients followed up till they were discharged.

RESULTS

There were 5045 deliveries during the study period of six months. There were 104 twin deliveries with an incidence of 20 per 1000 live births. In the present study, 98% of the cases were booked. 22% of the cases were referred for their maternal and obstetric complications and for better neonatal care. This was statistically significant ($p < 0.05$). Maximum incidence of twinning (46%) was in the age group 20-25 years. History of ovulation induction was more among twin pregnancies (10%) than singleton pregnancies (2%) and the difference was statistically significant. Both groups were comparable with respect to parity.

	Case	Control	Statistics
Referred Cases	22	8	$\chi^2=8.58$
Non-Referred Cases	78	92	$P < 0.01$ Significant

Table 1. Comparison of Referred Cases Among Case and Control

Maternal Complications	Twin Pregnancy Number	Singleton Pregnancy Number	Z	Statistics Significance
Pre-eclampsia	31	8		$P < 0.05$ Statistically significant
Mild	26	6		
Severe	5	2	7.4	
Preterm labour	20	5	3.3	$P < 0.01$ Significant
PROM	13	5	2.0	$P < 0.05$
Hyperemesis	11	3	2.2	$P < 0.05$
Threatened abortion	7	2	1.7	$P > 0.05$
PPH	11	4		$P < 0.05$ significant
Mild	7	3	2.0	
Moderate	2	1		
Severe	2	1		
Anaemia	23	16	1.25	$P > 0.05$
Hydramnios	4	1	0.83	$P > 0.05$
IHCP	2	0		
GDM	10	4	1.67	$P > 0.05$
Abruption grade 1	2	1		
Placenta previa	1	1		
UTI	5	3		
Cord prolapse	2	0		

Table 2. Analysis of Maternal Complications

PROM, preterm labour, preeclampsia, anaemia, hyperemesis, hydramnios, intrahepatic cholestasis of pregnancy and postpartum haemorrhage were more among the twin pregnancies. A case of severe PPH underwent hysterectomy after correction of DIC.

Majority of the twin pregnancies were diagnosed during the second trimester as most of the patients had their first routine ultrasound during the second trimester.

Presentation	Case	Percentage	Control	Percentage	Statistics Z P
Vertex	140	70	93	93	5.6 $P < 0.01$
Breech	55	27.5	6	6	5.4 $P < 0.01$
Transverse	5	2.5	1	1	1.01 $P > 0.05$
Face	0	0	0	0	

Table 3. Analysis of the Presentation in Twins vs. Singleton Pregnancy

Vertex-vertex was the commonest presentation (53%) followed by vertex-breech (19%) and breech-vertex (12%). It was observed that there was an increase in the

malpresentations in the twin (30%) compared to singleton pregnancies (7%). The finding was statistically significant.

On analysing the chorionicity, dichorionic-diamniotic (64%) was the commonest followed by monochorionic-monoamniotic (35%). There was one case of monochorionic-monoamniotic twin associated with polyhydramnios and IUD of the first baby.

Majority of twins went into spontaneous onset of labour (57%). Only 32% to twins went for induction of labour compared to 44% of singleton pregnancies.

Gestational Age	Twin Pregnancy		Singleton Pregnancy	
	Number	%	Number	%
28-31 weeks	6	6	0	0
32-34 weeks	14	14	4	4
35-37 weeks	29	29	17	17
38-40 weeks	51	51	74	74
>40 weeks	0	0	5	5
Mean	36.6		38.5	
S.D.	2.7		1.6	
N	100		100	
Statistics: -t=50 p <0.05				
Table 4. Analysis of Gestational Age at the Onset of Labour				

The mean gestational age of the twin pregnancies was 36.6 weeks, while for singleton pregnancies, it was 38.5 weeks, that is 1.9 weeks earlier compared to singleton pregnancy and the difference was statistically highly significant.

	Case	Control	Statistic
Term	63	95	
Preterm	37	5	P<0.001
Table 5. Distribution of Term Vs. Preterm Deliveries			

Mode of Delivery	Twins		Singleton	Statistics	
	I Baby	II Baby		Z	P
Vaginal delivery (Vx)	53	48	74		
Vacuum	4	4	3		
Assisted-breech delivery	-	2	2		
Forceps	-	-	1		
Elective C.S.	11	11	5	1.57	P>0.05
Emergency C.S.	26	29	15	2.5	P<0.05
Table 6. Analysis According to the Mode of Delivery					

Vaginal route of delivery was more in singleton pregnancies (80%) compared to twin pregnancies (57%), which was statistically significant. Though elective and emergency caesarean sections were more with twins compared to singleton, the difference in emergency C.S. rate was only statistically significant (p<0.05). There were 3 cases of twins who had vaginal delivery for the first of twin

and needed emergency C.S. for the second of the twin for transverse lie and in coordinate uterine action.¹

Time interval between the deliveries of the twins was noted. <10 minutes-62 cases, between 10-30 minutes-29 cases and >30 minutes-7 cases. Out of the 7 cases with the intertwin delivery >30 minutes, 3 cases had caesarean section for the second of twin, the indications being transverse lie of the second twin in 2 cases and incoordinate uterine action in one case. There was one intrapartum stillbirth, one neonatal death and one case of severe respiratory distress in this group. Thus, increasing twin delivery interval had an adverse effect on the perinatal outcome. The rate of caesarean section also increased as the interval between deliveries of twins increased.

Birth Weight in kg	Case		Control	
	Number	%	Number	%
<1 kg	3	1.5	0	0
1-1.4 kg	22	11	4	4
1.5-1.9 kg	42	21	1	1
2.0-2.4 kg	78	39	17	17
2.5-2.9 kg	47	23.5	52	52
3.0-3.4 kg	6	3	28	28
3.5-3.9 kg	6	3	28	28
4.0 and above	0	0	1	1
Table 7. Analysis According to Birth Weight				

Birth Weight	Case	Control	Statistics
Mean	2.12	2.81	t=23.0
SD	0.5	0.5	SE=0.03
N	192	100	P<0.001
Table 8. Statistical Analysis of Birth Weight			

The mean birth weight of the twin pregnancy was 2.12 kg while that of the singleton pregnancy was 2.81 kg. Low birth weight babies were more in twin pregnancies than singleton pregnancies.

IUGR	Case		Control		Statistics
	Number	%	Number	%	
Present	52	26	11	11	X ² =7.46
Absent	148	74	89	89	P<0.05
Table 9. Analysis According to IUGR					

26% of twin babies had IUGR in contrast to 11% of singleton babies and the difference was statistically significant (p<0.05).

There was no significant difference in the sex distribution of babies. There were 5 cases of congenital anomalies among twin babies- 1 anencephaly, 1 cystic hygroma, 1 omphalocele, 1 ambiguous genitalia and foetal ascites and hydrops. Since, the study has considered only gestational age beyond 28 weeks, many malformed foetuses were not included.

Apgar Score	Twin			Singleton	
AT 1'	I	II	%		%
8-10	84	70	77	90	90
5-7	5	17	11	6	6
<5	6	4	5	2	2
Apgar Score	Twin			Singleton	
AT 5'	I	II	%		%
8-10	86	79	82.5	91	91
5-7	4	9	6.5	5	5
<5	5	3	4	2	2

Table 10. Analysis According to Apgar Score

The Apgar scores of the singleton babies were definitely more than the twin babies. Also, the Apgar score of the first twin was more than that of the second of twin.

	Number	%	Statistics	P value
Twin Pregnancy	52	26	$\chi^2=5.96$	P<0.05 significant
Singleton Pregnancy	13	13		

Table 11. Analysis of the NICU Admission

Cause	Twin Pregnancy	Singleton Pregnancy
Extreme prematurity	15	2
Preterm, RD	9	13
Neonatal hyperbilirubinaemia	12	3
Birth asphyxia	4	1
Thick MAS	1	1
Hypoglycaemia	4	1
Sepsis	5	2
Seizures	0	0
Severe IUGR, LBW	2	0

Table 12. Causes of NICU Admission

NICU admission rate was more with twins and the difference was statistically significant.

Outcome	Case		Control	Statistics
	Number	%		
Live birth	186	93	97	$\chi^2=35.2$ P<0.001
IUD	8	4	2	
Stillbirth	6	3	1	
NND	10	5	2	$\chi^2=5.67$ P <0.05

Table 13. Analysis According to Perinatal Outcome

IUDs, stillbirths and NNDs were more with twin pregnancies and the difference was statistically significant.

Outcome	Case				Control	
	I Twin	II Twin	Total	%	Total	%
IUDs	3	5	8	4	2	2
Stillbirths	2	4	6	3	1	1

NNDs	4	6	10	5	2	2
NICU admission	23	29	52	26	13	13

Table 14. Analysis of Perinatal Outcome According to the Birth Order of Twins

Statistics= $\chi^2=5.92$, p<0.05 significant.

It was seen that the number of stillbirths, NNDs, IUDs and NICU admissions were more for the second of the twin than the first twin. This was mainly due to the malpresentations, birth asphyxia and operative deliveries for the second of the twin.

There were 6 cases of single foetal demise diagnosed between 20 to 36 weeks of gestation-3 in DCDA twins and 3 in MCDA twins. All the MCDA surviving twin ended up in NND while the two DCDA survivors had good outcome with Apgar 9 at 1" and birth weight 2.06 kg and 2.52 kg. The third DCDA survivor was preterm and ended in NND.

The overall perinatal mortality rate in this study was 12% for the twin pregnancies compared to 5% for the singleton pregnancies. The perinatal mortality for the second of the twin was 15% compared to 9% for the first of the twin. This finding was highly significant.

DISCUSSION

The incidence of multiple pregnancies has shown a significant increase over the last decades due to postponement of maternity on the part of women and the dissemination of assisted reproduction techniques. In the United States, incidence of these pregnancies has increased by 59% between 1980 and 1999 with twin pregnancies accounting for about 94% of all multiple pregnancies.¹

Although, twins occur in approximately one of 80 pregnancies corresponding to 2.6% of all newborns, they account for 12.2% of preterm births and 15.4% of neonatal deaths.^{2,3} The main causes of adverse neonatal outcomes in multiple pregnancies are related to prematurity, foetal growth restriction and low birth weight.⁴ In addition, these pregnancies are prone to complications inherent to twinning, such as acardiac foetus, conjoined twins and twin-twin transfusion syndrome. In addition, the risk of congenital anomalies is about 1.7 times higher than among singleton pregnancies and is more significant in monozygotic pregnancies.^{4,5}

Preterm birth is observed in approximately 54% of all twin pregnancies. Half of these births have an iatrogenic origin and are related to maternal or foetal complication, while the other half consists of cases of spontaneous premature labour or premature membrane rupture.³ The average birth weight is 2367 g and about 52% of the newborns weigh less than 2500 g. The risk of growth restriction is three times higher than in singleton pregnancies.^{6,7} Despite the improvements in both obstetric and neonatal care, the perinatal mortality continues to remain high for the twins. The important causes being prematurity and its complications, low birth weight, malpresentations and dystocia and birth asphyxia associated

with delay in delivery of the second twin and complications of a shared foetal circulation in monozygotic twin.

All of these factors explain the high perinatal mortality observed in multiple pregnancies, which is 5 to 6 times higher when compared to singleton pregnancies.¹ When analysed according to chorionicity, monochorionic pregnancies present a two to three times higher risk than dichorionic pregnancies.⁸ Multiple pregnancy puts mother at risk of miscarriage, pre-eclampsia, APH, PPH, iron and folic acid deficiency, anaemia, polyhydramnios, preterm labour, PROM and increased rate of caesarean section.⁹ Pre-eclampsia is 2-3 times more common in multiple than singleton pregnancy and likely to be more severe.¹⁰ Mean gestational age at birth inversely related to plurality. Similar observation was noted in a study done in United States. Mean gestational age was 39 weeks in singletons, 35.8 weeks in twins and 32.5 weeks in triplets.¹¹

In my study, the incidence of twin pregnancy was 1 in 50. History of ovulation induction present in 10 cases and maternal complications like PIH and preterm labour 4 times more common among twin pregnancies. Incidence of PPH and PROM were 2.5 times more common in twins. The incidence of prematurity was more in twins (37%) compared to singleton pregnancies (5%). The incidence of malpresentations and operative deliveries more in twins. LSCS rate was 40% in twins as against 20% for singletons. Majority of twins had spontaneous onset of labour. Low birth weight (mean difference of 690 gm) and FGR more in twins. The important causes of perinatal mortality were prematurity, malpresentations, cord prolapse, congenital malformations and operative deliveries. The overall perinatal mortality for twins in my study was 12% with 24 perinatal deaths in 200 fetuses, 15% for the second of twin compared to 9% for the first of twin mainly due to increased incidence of malpresentations, operative deliveries, birth asphyxia and severe respiratory distress among the second of the twin. NICU admissions, stillbirth and NNDs also more among twins.

CONCLUSION

Preterm labour is the leading cause of increased perinatal mortality in twin pregnancy. So, all efforts to be made towards prolongation of gestational age, increasing the birth weight and optimising the mode of delivery. Better intranatal care with liberal use of LSCS along with good intensive

neonatal care unit will help to reduce the perinatal mortality rate in twin pregnancies significantly.

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